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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Bruce TOGNAZZINI

Application No.: 09/153,230

Filed: September 15, 1998

For: LINEAR TOUCH INPUT DEVICE

Group Art Unit: 2774

Examiner: Xiao Wu

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

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1. Response to Supplemental Examiner's Answer, including Appendix (36 pages)
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Docket No.: 6502.0500-01(P1623C)

PATENT

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18 Reply Brief 3-30-04 MP

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of :

Bruce TOGNAZZINI : Reply Brief

Serial No.: 09/153,230 : Group Art Unit: 2774

Filed: September 15, 1998 : Examiner: X. Wu

For: LINEAR TOUCH INPUT DEVICE

RESPONSE TO SUPPLEMENTAL EXAMINER'S ANSWER

Assistant Commissioner for Patents
Washington, DC 20231

Sir:

This Response to Supplemental Examiner's Answer is submitted in response to the Supplemental Examiner's Answer (hereinafter "Supplemental Answer") mailed January 23, 2004, in response to the Remand of Appeal mailed October 16, 2003.

REAL PARTY IN INTEREST

The real party in interest is SUN MICROSYSTEMS INC. of Mountain View, California.

RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences that will affect or be affected by the decision in this case.

STATUS OF CLAIMS

Claims 1-2, 4-17 and 22-42 remain in the application. Claims 1-2, 4-17 and 22-42 stand rejected. The independent claims are 1, 7, 22 and 29.

STATUS OF AMENDMENTS

No amendments have been filed subsequent to the last Office Action.

TABLE OF CONTENTS

SUMMARY OF INVENTION

Computers are applied to perform many functions, from processing information to operating machinery. Many applications require a user of the computer to indicate the user's intention by inputting information. Even though speech recognition is becoming more available, still most input involving words or commands are indicated to a computer via a keyboard on which a user types a sequence of characters to indicate a command or data. Graphical user interfaces (GUIs) have been used to input commands and choices among a limited set of choices, by representing such inputs with graphical objects (such as icons, buttons and menu items) and having the user select one by moving a cursor across the two dimensional screen. The cursor is moved by a continuous input device, such as a pointing device like a mouse, in which a range of device positions translates to a range of cursor positions. If the graphical objects are arranged in the two dimensions of the screen, only two dimensions indicated by the continuous input device are utilized. If the objects are arranged conceptually in three dimensions, e.g., as game pieces in a three dimensional game, then the objects' representations on the two dimensional screen are typically accomplished as a perspective rendering of the objects to give the appearance of being arranged in a virtual three dimensional space. In this case three dimensional movement of the continuous input device may be employed to move the cursor.

Unfortunately not every user is adept at positioning a pointing device in two or three dimensions simultaneously. Hand steadiness variations among healthy people, disease, or physical impairment may prevent some users from exercising the physical control of the pointing device to successfully manipulate the graphical objects.

Even for those users with steady hands and fine motor control, switching from keyboard for textual data input to a pointing device requires inefficient movement of one or both hands

from the keyboard to the pointing device and back to the keyboard. In addition, a person typically has finer control of a dominant hand than of a second hand, so that the dominant hand performs all the operations involving the pointing device while the second hand is underutilized.

The techniques disclosed in the present application provide for increased control on a continuous input device by providing for separate continuous input for each dimension. In some embodiments, continuous input in one dimension is effected by the location along a strip where pressure is applied. Other sensors known in the art can be used to detect location where a user touches the strip, such as conductivity or temperature, to provide the continuous input. The strip can be straight or curved. In these embodiments, only movement in the along-strip direction effects a change in continuous input; perpendicular movement, i.e., cross-strip movement or widthwise location, is ignored. Preferably, the strips are on a keyboard and are approximately as wide (in the cross-strip direction) as a human finger. Ignoring cross-strip movement or location effectively isolates the movement of the responding cursor in one dimension from movement of the cursor in another dimension, and consequently requires less fine motor skill by the user to position the cursor.

In some embodiments, continuous input in one dimension is effected by the amount of pressure applied to the indicator, rather than by the position where the strip is touched. This is especially useful in indicating movement in a third dimension where, for example, the first two dimensions respond to the position of a user's two thumbs on two respective strips on a keyboard, or to the position of a user's dominant hand holding a conventional mouse on a flat surface.

According to at least one aspect of the present invention, the dimension controlled by the continuous input device need not even be a spatial dimension, but can be some other property of

the computer application that must be controlled continuously over a range of values, e.g., speed of scrolling text, volume of emitted sound, scaling the size of a graphic object, etc., even the granularity of the detection of the location change of another strip. In the specification, the continuous input device for a single dimension according to the invention is called a linear touch input device.

ISSUES

The issues on appeal are:

Whether the Examiner erred in rejecting claims 1-2, 4-17 and 35-41 with a new rejection under the judicially created doctrine of obviousness-type double patenting, as being unpatentable over claim 2 of U.S. Patent 5,859,629 ('629 patent) in view of Kawamoto (U.S. Patent No. 5,365,254).

Whether the Examiner erred in rejecting claims 1-2, 4-5, 7-11, 35-36 and 38-39 under 35 U.S.C. § 102(b) as being anticipated by Kawamoto, U.S. Patent 5,365,254 (Kawamoto).

Whether the Examiner erred in rejecting claims 6, 12-17, 22-26, 28-33 and 42 under 35 U.S.C. §103(a) as being unpatentable over Kawamoto in view of Bequaert et al., U.S. Patent 4,042,777 (Bequaert).

Whether the Examiner erred in rejecting claims 27 and 34 under 35 U.S.C. § 103(a) as being unpatentable over Kawamoto in view of Bequaert and further in view of Smith et al., U.S. Patent 5,111,005 (Smith).

GROUPING OF CLAIMS

All claims are argued separately, and each claim stands or falls independently of any other claim; except, claims 2 and 4 stand or fall with claim 1, claim 15 stands or falls with claim 12, claim 23 stands or falls with claim 22, and claim 30 stands or falls with claim 29.

THE ARGUMENT

Obviousness - Type Double Patenting Rejections

The Examiner erred in rejecting claims 1-2, 4-17 and 40-41 under the judicially created doctrine of obviousness-type double patenting over claim 2 of U.S. Patent 5,859,629 in view of Kawamoto (U.S. Patent No. 5,365,254).

Claims 7-17 and 35-37

The Supplemental Answer asserts that "[c]laim 37 is [the] most comprehensive claim among [the] group of claims 7-17 and 35-37." The Supplemental Answer also provides a side-by-side comparison of patented claim 2 and claim 37 of the present application.

Specifically, the Supplemental Answer asserts that the apparatus claim of this application and the method claim of the patent "are not patently distinct from each other because the apparatus structure in claim 37 would perform the method as recited in claim 2, and vice versa, the method step in claim 2 would include the apparatus structures to support the steps. " Appellant respectfully submits that the structures of claim 37 are not necessary to support the method steps of claim 2. In fact, there are non-obvious variations between the minimum structures required to support claim 2 and the structures of claim 37. The Supplemental Answer discusses some of these differences.

Particularly, the Supplemental Answer asserts that "claim 37 of this application recites 'a housing supporting a plurality of keys, said housing having a top face, a bottom face, and left and right edges' and patented claim 2 recites 'one or more touch keys' but fails to mention the housing structure." The Supplemental Answer also asserts that "claim 37 recites 'said linear touch input device located adjacent to at least one of said left and right edges on said top face and comprising a strip of touch sensitive material, said strip having a substantially constant width and length which is at least twice said width,'" and "wherein said substantial constant width is

approximately the width of a human figure." The Supplemental Answer concedes that claim 2 of the patent is silent regarding the location of the strip.

To overcome the above-mentioned differences between claim 37 and claim 2, the Supplemental Answer cites to Kawamoto as teaching "a keyboard having an integrated touch input device, the keyboard comprising; a housing supporting a plurality of keys (14, 18), the housing having a top face, bottom face, and left and right edge, and a linear touch input device (e.g., 13) having a substantially constant width and a length which is at least twice the width and substantially constant width is approximately the width of a human finger (see col. 2, lines 55-61)."

The Supplemental Answer further asserts that "it would have been obvious to one of ordinary skill in the art to have added the features of the linear touch input device with the finger size of the linear touch input device for a keyboard as taught by Kawamoto into the patented claim 2[,] because both patent claim 2 and Kawamoto teach the use of touch sensitive strip area and further the finger size of the touch strip of Kawamoto can provide most effective touch area for finger input without taking too much space."

Appellant disagrees and respectfully submits that claim 37 recites, for example, a "keyboard comprising: a housing supporting a plurality of keys, said housing having a top face, a bottom face, and left and right edges; and a first linear touch input device located adjacent to at least one of said left and right edges on said top face and comprising: a strip of touch sensitive material, said strip having a substantially constant width and a length which is at least twice said width, wherein said substantial constant width is approximately the width of a human finger, wherein said linear touch input device further comprises a number of touch keys or buttons and

wherein said data signal also indicates the selection of one or more said touch keys or button." Kawamoto and claim 2, singularly or in combination, do not teach or suggest such features.

In contrast to claim 37, Kawamoto is directed to a graph display system. Kawamoto teaches a touch area on a display to indicate the position along an X axis where a trend graph is centered. The item cited by the Examiner is the touch area 13 on the display. Kawamoto teaches that "in a display screen 10 is a touch area 13 and the X coordinate of the touch position is detected" (Kawamoto, column 2, lines 52-54). Kawamoto has touch sensitive material on a graphical display screen, which is not a keyboard. In the context of the specification of the present application, keys or buttons on a keyboard are different from touch sensitive material on a screen. Thus, Kawamoto does not teach that the touch sensitive material is on a keyboard at all, as required by claim 37. In addition, claim 37 recites the structure of the keyboard and indicates where on the keyboard the touch sensitive strip is located. Because Kawamoto does not teach a touch sensitive strip on a keyboard, it certainly cannot teach where on the keyboard the touch sensitive strip is placed.

Kawamoto also teaches that the "touch area 13 consists of 15 touch zones along axis X. Each of these touch zones corresponding in size to a human finger and is 48 dots x 48 dots." Therefore, Kawamoto teaches touch zones on the display that are square in shape. Kawamoto does not teach or suggest a keyboard with "strip having a substantially constant width and a length which is at least twice said width, wherein said substantial constant width is approximately the width of a human finger."

For at least the reasons given above, it is submitted that the Examiner's rejection of claim 37 under the judicially created doctrine of obviousness-type double patenting over claim 2 of

U.S. Patent 5,859,629 in view Kawamoto is improper. Accordingly, Appellant respectfully requests reversal of the rejection.

Claims 1-2, 4-6, and 38-41

With respect to claims 1-2, 4-6 and 38-41, the Supplemental Answer asserts that claims 40 and 41 are the most comprehensive claims among the group of claims 1-2, 4-6 and 38-41. The Supplemental Answer also provides a side-by-side comparison between patented claim 2 and claims 40 and 41 of the present application.

Specifically, the Supplemental Answer asserts that the apparatus claim of this application and the method claim of the patent "are not patently distinct from each other because the apparatus structure in claims 40 and 41 would perform the method as recited in claim 2, and vice versa, the method step in claim 2 would include the apparatus structures to support the steps. Appellant respectfully submits that the structures of claims 40 and 41 are not necessary to support the method steps of claim 2. In fact, there are non-obvious variations between the minimum structures required to support claim 2 and the structures of claims 40 and 41. The Supplemental Answer discusses some of these differences.

The Supplemental Answer also asserts that "claims 40 and 41 of this application recite 'a strip of touch material sensitive to a range of pressure values of said contact into a data signal and to output said data signal.'" The Supplemental Answer further asserts that "patented claim 2 recites 'contacting the position of said contact into a data signal indicating the position of said contact along the length of said strip,' and 'transporting (which is treated as 'converting') the pressure contact and wherein said data signal also indicates the pressure of said contact.'"

Based on the foregoing assertions, the Supplemental Answer further asserts that the "differences between the patented claim 2 and claims 40 and 41 of this application are not

patentably distinct because it is inherent that the touch sensitive material is sensitive to a range of values (e.g., touch or not touch)." The Supplemental Answer provides a further example in which it asserts that "in a most simple case, a range of pressure values are 1 and 0. The value data 1 could represent the contact is detected or the contact is above a threshold pressure value. On the other hand, the value data 0 could represent no contact is detected or the contact is below a threshold value."

Appellant disagrees and respectfully submits that the touch sensitive material recited in claim 2 does not inherently teach or suggest the function recited in claims 40 and 41. "The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic." MPEP § 2112 (*citing* In re Rijckaert, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993) and In re Oelrich, 666 F.2d 578, 581-82, 212 USPQ 323, 326 (CCPA 1981)). "To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.'" MPEP § 2112 (*citing* In re Robertson, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999)).

In the Examiner's example, the touch sensitive material may be set to detect a threshold pressure value (one value), and once that value is detected, an analog to digital conversion may take place to produce the value data 1 and the data value 0. As the Supplemental Answer asserts, the "value data 1 could represent the contact is detected or the contact is above a threshold pressure value. On the other hand, the value data 0 could represent no contact is detected or the contact is below a threshold value." Appellant respectfully asserts that, since there is another

possible operation of the touch sensitive material in which the touch sensitive material does not necessarily operate in the manner described in the Supplemental Answer, the touch sensitive material of claim 2 is not inherently sensitive to a range of values.

In rejecting claims 40 and 41, the Supplemental Answer also asserts that "[c]laims 40 and 41 of this application recite said strip having substantially constant width and length which is at least twice said width." The Supplemental Answer concedes that "patented claim 2 is silent in what the size of the touch strip is," but cites Kawamoto "to teach [a] touch sensitive input device including a strip of touch sensitive material (13) having a substantially constant width and length which is at least twice the width (see col. 2, lines 55-61)." Based on the above, the Supplemental Answer asserts that "[i]t would have been obvious to one of ordinary skill in the art to have added the features of the linear touch input device with the finger size of the linear touch input device for a keyboard as taught by Kawamoto into the patented claim 2[,] because both the patented claim 2 and Kawamoto teach the use of a touch sensitive strip area and further the finger size of the touch strip of Kawamoto can provide most effective touch area for finger input without taking too much space."

In contrast to the recitation of claim 2, the citation provide by the Examiner discloses that the "touch area 13 consists of 15 touch zones along axis X. Each of these touch zones [on the display] corresponding in size to a human finger and is 48 dots x 48 dots." Therefore, Kawamoto teaches touch zones on a display that are equal in width and in length, not "[strips] having substantially constant width and length which is at least twice said width."

In further support of the rejection of claim 40, the Supplemental Answer asserts that claim 40 recites "a second strip of touch sensitive material, wherein said first and a second [strips] of touch sensitive control input in one dimension," and "wherein one of said first and

second touch sensitive input strips controls granularity of the other of said first and second touch sensitive input strips." The Supplemental Answer also asserts that "patented claim 2 recites 'wherein selection of said touch keys modifies a granularity of movement controlled by said strip of touch sensitive material[,]' but fails to mention the touch strip is a one dimension touch strip and also fails to mention a second strip of touch sensitive material for controlling granularity of the first strip." However, the Supplemental Answer asserts that the stated difference is not patentably distinct, and cites Kawamoto "to teach a touch input device including a strip of touch sensitive material (13) in one dimension (e.g., horizontal direction)," and "a second strip of touch sensitive material (14) for a fine adjustment curser movement in one dimension (e.g., horizontal dimension)."

Based on the above, the Supplemental Answer asserts that "[i]t would have been obvious to have used the one dimension touch strip control input of Kawamoto for the patented claim 2 because the one dimensional touch strips of Kawamoto provides a simple way for controlling a cursor movement in one dimension. Furthermore, it would have been obvious to one of ordinary skill in the art to have substituted the second strip of Kawamoto for the touch keys in the patented claim 2 since the second strip of Kawamoto functions in a similar way as a touch key for modifying the movement of the first strip."

In response, Appellant respectfully submits that the combination of claim 2 of the patent and Kawamoto does not render claim 40 obvious. Kawamoto discloses that "cursor 12 can be moved to a touch zone by touching touch area 13 and then moved by one dot units using the refine adjustment cursor movement key 14. (Kawamoto, col. 2, lines 65-67) Key 14 performs the individual function of moving the cursor one dot units; it does not interact or change the granularity of the touch area 13 so that further contact with area 13 is at a different granularity.

Therefore, substituting key 14 (or the second strip, as defined by the Supplemental Answer) into the invention of claim 2 would not teach or suggest the invention of claim 40. The substitution of key 14 for the keys recited in patented claim 2 would not produce "a second strip of touch sensitive material ..., wherein one of said first and second touch sensitive input strips controls granularity of the other of said first and second touch sensitive input strips," as recited in claim 40.

In further supporting the rejection of claim 41, the Supplemental Answer asserts that claim 41 of this application recites "a second strip of touch sensitive material, wherein said first and a second [strip] of touch sensitive control input in one dimension" and "at least one key that when activated simultaneous to activation of either touch sensitive input strip controls granularity of input." The Supplemental Answer further asserts that "patented claim 2 recites 'activating one or more touch keys substantially simultaneously with contacting said strip of touch sensitive material' and 'wherein selection of said touch keys modifies a granularity of movement controlled by said strip of touch sensitive material,' but fails to mention the touch strip is one dimension touch strip and also fails to mention a second strip of touch sensitive material." However, the Supplemental Answer asserts that the stated difference is not patentably distinct, and cites Kawamoto "to teach a touch input device including a first strip of touch sensitive material (13) for controlling the cursor movement in one dimension (e.g., horizontal dimension), and also a second strip of touch sensitive material (14) for controlling a fine adjustment curser movement in one dimension (e.g., horizontal dimension)."

Based on the above, the Supplemental Answer asserts that "it would have been obvious to have used the one dimension touch strip control input of Kawamoto for the patented claim 2 because the one dimensional touch strips of Kawamoto provides a simple way for controlling a

cursor movement in one dimension. Furthermore, it would have been obvious to add a second touch strip of Kawamoto into the patented claim 2 because the second touch strip of Kawamoto can provide an additional control such as a fine adjustment of cursor movement."

In response, Appellant respectfully submits that the combination of claim 2 of the patent and Kawamoto does teach or suggest claim 41. Even if it is possible to combine Kawamoto and patented claim 2, as described in the Supplemental Answer, the resulting combination does not teach or suggest "at least one key that when activated simultaneous to activation of either touch sensitive input strip controls granularity of input." Patented claim 2 does not provide such a recitation, and Kawamoto fails to teach or suggest an element with such features.

For the reasons given, it is submitted that the Examiner's rejection of claims 40 and 41 under the judicially created doctrine of obviousness-type double patenting over claim 2 of U.S. Patent 5,859,629 in view Kawamoto is improper. Accordingly, Appellant respectfully requests reversal of the rejection.

Section 102(b) Rejections

The Examiner erred in rejecting claims 1-2, 4-5, 7-11, 35-36 and 38-39 under 35 U.S.C. § 102(b) as being anticipated by Kawamoto.

Claims 1-2, 4-5, and 38-39

In response to Appellant's arguments in the Appeal Brief, the Supplemental Answer asserts that the Appellant's argument "that Kawamoto teaches detecting position but does not teach or suggest measuring the levels of pressure applied by the user at the position" is unpersuasive, "because Kawamoto clearly [teaches] that the touch area can detect the pressure applied by the user and the touch position of the touch area. The range of pressure values can be considered as two values such as 0 and 1 (e.g. '0' represents pressure below the threshold

pressure and '1' represents pressure above the threshold pressure). Thus, Kawamoto clearly teaches 'a range of pressure values' as recited in claim 1." The Supplemental Answer also asserts that the "limitation of 'a range of pressure value' is not only anticipated by Kawamoto, but also is well known in the art as admitted by [A]pplicant (see page 6, line 25 and page 7, line 1 of [A]pplicant's specification)."

Appellant disagrees and respectfully submits that independent claim 1 recites that the device includes "material sensitive to a range of pressure values" and that the device "transpose the position and pressure value of said contact into a data signal." Kawamoto specifically detects only the "X coordinate of the touched position" (Kawamoto, column 2, lines 53-54). This detection is a position of contact, not a measurement of a level of pressure. It is not necessary that the device respond to a zero pressure and another pressure as asserted by the Examiner. It is only necessary that the device in Kawamoto respond to any pressure above the threshold pressure and have no response otherwise. For example, if the threshold pressure is 1 dyne per square centimeter (dynes/cm2) then the sensor responds at 5 dynes/cm2 and 10 dynes/cm2 but not at 0.5 dynes/cm2 or 0.1 dynes/cm2. A response may be uniform above the threshold and thus not indicate the actual pressure or multiple pressure values. Multiple levels of pressure values, i.e. "a range of pressure values," are not taught or required by Kawamoto.

Furthermore, even if the citation to the specification asserted in Supplemental Answer discloses "[detecting] the user's level of pressure on strip 101 in a manner known in the art," Kawamoto does not teach sending to the computer a signal responsive to both "position and pressure value" as required by claim 1. Only the position is sent. Position and pressure are two different elements in claim 1, yet Kawamoto teaches only one of them is sent to the computer, the position. (Kawamoto, column 2, lines 63-65). One of ordinary skill in the art would

understand that Kawamoto does not send a pressure value with the position value because a detection is made inherently if the pressure is above a threshold; the actual pressure above the threshold is not required. Furthermore, the threshold is usually constant. If the actual pressure is not known and the threshold value does not change, the pressure value associated with the position detection is not worth reporting. Furthermore, Kawamoto shows no use for the particular pressure value used to detect the position touched, even if that pressure were known and reported.

In addition to the above, Kawamoto does not teach or disclose "a strip of touch-sensitive material ... having a substantially constant width and length which is at least twice said width." In contrast to claim 1, Kawamoto discloses that the "touch area 13 consists of 15 touch zones along axis X. Each of these touch zones corresponding in size to a human finger and is 48 dots x 48 dots." Therefore, Kawamoto teaches touch zones which are equal in width and in length, not "[strips] having substantially constant width and length which [are] at least twice said width."

Because Kawamoto does not teach or suggest at least the limitations of claim 1 discussed above, the rejection of claim 1 under 35 U.S.C. §102(b) is improper. For at least the same reasons, the rejection is improper for claims 2 and 4-5 and 38-42 which depend, directly or indirectly, on claim 1.

With respect to claim 5, the Supplemental Answer asserts that: "[A]pplicant argues that the elements 14, 16 and 17 of Kawamoto are referred to 'touch screen keys' which are not the same as the key or buttons of claim 5[,] because the claim states that the keys are in addition to the touch sensitive strips." In response, the Supplemental Answer asserts that: "[t]his argument is not persuasive because claim 5 does not require 'keys are in addition to the touch sensitive strips' as argued by Appellant. Claim 5 only requires 'said input device further comprises a

number of keys or buttons and wherein said data signal also indicates the selection of one or more of said keys or button.'"

Appellant respectfully submits that claim 5 recites "said input device further comprises a number of keys or buttons." Claim 5 depends from claim 4, and claim 4 depends from claim 1. Claim 1 recites "a strip of touch sensitive material," and in addition, claim 5 recites "said input device further comprises a number of keys." Therefore, contrary to the Examiner's positions, it follows that claim 5 requires a number of keys in addition to the touch sensitive material of claim 1.

Kawamoto's input device consists of screen areas on a touch screen. Therefore, all input in the Kawamoto device is on touch sensitive material rather than on keys or buttons. The examiner cites items 14, 16 and 17 as keys or buttons, but these elements refer to "touch screen keys" which are not the same as the keys or buttons of claim 5. The claim states that the keys are in addition to the touch sensitive strips, and the specification makes clear the keys or buttons are keys or buttons on a keyboard (specification, page 7, lines 5-6), which one of ordinary skill in the art would understand are mechanical keys, not touch sensitive material. For at least these reasons, claim 5 is allowable. Further, claim 6 depends on claim 5 and is allowable for at least the same reasons.

In addition, claim 38 recites "a second strip of touch sensitive material" which is not shown by Kawamoto.

With respect to claim 39, the Supplemental Answer asserts that: "Kawamoto discloses a two-dimensional input. For example, element 13 controls the cursor movement in [the] horizontal direction. Elements 16 and 17 controls a vertical zooming." Appellant respectfully submits that claim 39 recites "first and second strips . . . in combination control two-dimensional

input." Kawamoto only teaches touch sensitive areas to input one dimension, the "X axis" (Kawamoto, column 2, lines 14-15). Elements 16 and 17 are "[g]raph enlargement screen key ... 16 and graph reduction screen key 17." (Kawamoto, column 3, lines 1-3) Kawamoto does not teach or disclose "first and second strips [that] in combination control two dimensional input."

Claims 7-11 and 35-36

With respect to claim 7, the Supplemental Answer asserts that: "[A]pplicant argues that Kawamoto has sensitive material on a graphical display screen which is not a keyboard." In response, the Supplemental Answer asserts that: "[t]his argument is not persuasive because the device of Kawamoto is an integrated device comprises display area and key input area. Thus, Kawamoto's device is also a keyboard device."

Appellant disagrees. Any device that receives input is not a keyboard. Those skilled in the art will appreciate that a "keyboard" ordinarily means a part of a computer system that resembles a typewriter keyboard and enables the user to control aspects of the computer. Appellant respectfully submits that independent keyboard claim 7 recites "a keyboard...[,] a housing supporting a plurality of keys . . . [,] and a strip of touch sensitive material" which are not shown by Kawamoto, because Kawamoto has touch sensitive material on a graphical display screen, which is not a keyboard. In the context of the specification, keys or buttons on a keyboard are different from a touch sensitive input. Thus, Kawamoto does not teach that the touch sensitive input is on a keyboard at all, as required by claim 7. In addition, claim 7 describes where on the keyboard the touch sensitive strip is located. Because Kawamoto does not teach a touch sensitive strip on a keyboard, it cannot teach where the touch sensitive strip is placed on the keyboard.

Furthermore, Kawamoto does not suggest that the touch area may be moved to a keyboard. To modify Kawamoto to place the touch sensitive area on a keyboard would change the principle of operation of Kawamoto. This is because Kawamoto associates a position of the X-axis on the displayed graph with the part of the touch area that is touched. As stated in Kawamoto, "[t]ouch area 13 consists of 15 touch zones along axis X." Since the axis X is on the display, the touch zones must be on or adjacent to the display. The touch zones cannot be placed along the axis X if the touch zones and touch area are on a keyboard instead of on the display. Also, Kawamoto states, "[initially, cursor 12 is displayed at the top of the display area 11 . . . [and] can be moved to a touch zone by touching touch area 13." (Kawamoto, column 2, lines 63-66). A cursor on a display cannot be moved to a touch zone that is on a keyboard. Therefore, Kawamoto does not teach or suggest a touch area on a keyboard.

The Examiner asserts that "the cursor control device is not [necessarily] located adjacent to display" (Final Office Action, page 6). This is irrelevant. The claims don't recite a cursor control but a touch sensitive strip. Kawamoto requires the touch zone to be on the display for the reasons given above and indicates the touch zone also controls a cursor movement. The fact that a different cursor control is not on the display is not relevant to the claim. As Kawamoto does not disclose a touch sensitive material on a keyboard, the requirements for anticipation under 35 U.S.C. § 102 have not been met.

Because Kawamoto does not teach or suggest a strip of touch sensitive material on a keyboard, the rejection for anticipation under 35 U.S.C. § 102(b) is improper. For at least the same reasons the rejection is improper for claims 8-17 and 35-37 which depend, directly or indirectly, on claim 7.

In addition, dependent claim 8 recites "signal does not indicate the widthwise position of said contact" which is not shown by the reference because the reference does not show a signal from a keyboard, but only a signal from a touch screen display.

In addition, dependent claim 9 recites "said data signal also indicates the pressure of said contact" which is not shown by Kawamoto. Kawamoto does not measure the pressure of the contact for the reasons given above, and in addition, Kawamoto does not measure contact on a keyboard in any case and so cannot measure the pressure of such contact.

In addition, dependent claim 10 recites "width is approximately the width of a human finger" which is not shown by the reference because the reference does not show a strip on a keyboard and so cannot teach the width of such a strip. Please also refer to the argument presented above for claim 37. For at least the same reasons, the rejection is improper for claim 11 which depends on claim 10.

In addition, dependent claim 11 recites "keys or buttons" which are not shown by Kawamoto which does not teach a keyboard with a touch sensitive strip and thus cannot teach such a device also has keys or buttons.

In addition, dependent claim 35 recites "longitudinal direction is substantially parallel to at least one edge" of the keyboard which is not shown by Kawamoto. Kawamoto teaches the sensitive material is arranged along the "axis X" on the graph on the screen and teaches away from arranging the strip anywhere on a keyboard.

In addition, dependent claim 36 recites "a two dimensional input signal" which is not shown by Kawamoto which only teaches one dimension, the axis X. Also, claim 36 depends on claim 17 which recites "a second linear touch input device" which is not shown by Kawamoto

which only shows one strip of pressure sensitive material. Please also refer to the argument presented above for claim 39.

For the reasons given, it is submitted that the Examiner's rejection of claims 1-2, 4-5, 7-11, 35-36 and 38-39 under 35 U.S.C. §102(b) as being anticipated by Kawamoto should not be sustained. Accordingly, Appellant respectfully requests reversal of the rejection.

Section 103(a) Rejections (Kawamoto in view of Bequaert)

The Examiner erred in rejecting claims 6, 12-17, 22-26, 28-33 and 42 under 35 U.S.C. §103(a) as being unpatentable over Kawamoto in view of Bequaert.

Claims Depending From Independent Claim 1 (Claims 6 and 42)

First, there is no motivation to combine Kawamoto and Bequaert because Bequaert is directed to a keyboard and Kawamoto is directed to a display device that will not function if the touch area is moved from the display to a keyboard, for the reasons given above. One of ordinary skill in the art would not be motivated to modify Kawamoto by moving the touch area of the display to the keyboard. The suggested modification would defeat the purpose and change the principle of operation of Kawamoto, which is to display a graph with a touch zone on the display associated directly with the X-axis of the graph on the display.

The Supplemental Answer states that "Bequaert is cited to teach the touch input device can be integrated with keyboard for inputting characters . . . so that the user can do both cursor control and inputting characters." Such an "integration" is not motivated by these references, because the prior art does not suggest the desirability of this combination. Kawamoto teaches away from moving the touch strip to a keyboard and the Supplemental Answer does not show where Bequaert suggests the thumb keys should be replaced with a touch strip for cursor control. On the contrary, the eight states of the four thumb keys of Bequaert are necessary because "the

thumb keys select the alphabet/-case, output order of characters . . . a space character. . . and capitalizing" (Bequaert, Abstract). The Supplemental Answer does not show where Bequaert suggests that these necessary keys can be replaced with a cursor control of any sort. Thus, the Examiner's own stated reason does not provide proper motivation to combine these references. It is submitted that the Examiner has applied impermissible hindsight in reconstructing references in light of the application disclosure.

Even if combined, Kawamoto does not teach or suggest a data signal with both pressure values and position; and Kawamoto does not teach or suggest putting a touch sensitive strip on a keyboard as argued above.

Bequaert is directed to a keyboard with keys that can be pressed simultaneously. "The operator presses several keys at once" (Bequaert, Abstract). The key combinations indicate "strings of characters," (Bequaert, Abstract). However, Appellant respectfully submits that Bequaert does not disclose or suggest a keyboard with a touch sensitive strip that detects position, or a separate measurement of the amount of pressure at the point of touch. Thus, Bequaert does not cure the deficiencies of Kawamoto, even if they are combined.

Appellant respectfully submits that the combination is not proper and, even if combined, does not teach a touch strip with both a pressure signal and a position detector, as required by independent input device claim 1. Thus, the combination does not teach or suggest a limitation of Appellant's claim 1, and a rejection of claim 1 or any of its dependent claims (such as claim 6) under 35 U.S.C. § 103(a) would be improper.

For at least the same reasons, the rejection is improper for claims 2, 4-6 and 38-42 which depend, directly or indirectly, on claim 1.

In addition to the arguments set forth above for independent claim 1, dependent claim 6 recites "said keys or buttons are located . . . so as to be operable by the fingers of a hand while said strip. . . is simultaneously touched by the thumb of the hand." This is not taught or suggested by the combination. Kawamoto teaches only a touch sensitive strip and Bequaert teaches only keys, so the combination does not address, and cannot address, the positional relationships of keys to the touch sensitive strip. Thus, the combination does not teach any arrangement of strip to keys, much less the particular arrangement required by claim 6.

In addition to the argument set forth above for independent claim 1, dependent claim 42 recites "at least one key . . . activated simultaneous to activation of said first touch sensitive input strip" which is not shown by the references, alone or in combination. Kawamoto teaches only a touch sensitive strip and Bequaert teaches only keys, so the combination does not address, and cannot address, the simultaneous activation of keys and the touch sensitive strip.

Claims Depending From Independent Claim 7 (Claims 12-17)

In addition to the argument set forth above for independent claim 7, dependent claim 12 recites limitations similar to claim 6 including "said keys or buttons . . . are located . . . so as to be operable by the fingers of a hand while said strip . . . is simultaneously touched by the thumb of the hand" which is not taught or suggested by the combination for the reasons given above for claim 6. For at least the same reasons, the rejection is improper for claims 13-16 which depend directly or indirectly on claim 12.

In addition to the argument set forth above for independent claim 7, dependent claim 13 recites "strip . . . on the top face . . . and said touch keys or buttons are located on at least one of said left edge and said right edge" which is not shown by Kawamoto and Bequaert. This particular arrangement of keys and touch sensitive strip on the keyboard is not shown, and

cannot be shown, by the combination, which does not suggest putting a touch sensitive strip on a keyboard.

In addition to the argument set forth above for independent claim 7, dependent claim 14 recites "strip . . . on the top face. . . and said touch keys or buttons are located on the bottom face" which is not shown by Kawamoto and Bequaert. This particular arrangement of keys and touch sensitive strip on the keyboard is not shown, and cannot be shown, by the combination, which does not suggest putting a touch sensitive strip on a keyboard.

In addition to the argument set forth above for independent claim 7, dependent claim 16 recites "strip. . . is substantially arc shaped" which is not shown by the combination. This particular arrangement of touch sensitive strip on the keyboard is not shown by either reference or by the combination.

In addition to the argument set forth above for independent claim 7, dependent claim 17 recites "second linear touch input device. . . located at or near said right edge" which is not shown by Kawamoto and Bequaert. This particular arrangement of touch sensitive strip on the keyboard is not shown by either reference or by the combination, which does not suggest putting a touch sensitive strip on a keyboard.

Independent Claim 22 and Dependent Claims 23-26 and 28

Because there is no motivation to combine Kawamoto and Bequaert, and even if combined, the combination does not teach or suggest "a linear touch input device integrated with said keyboard" as required by independent computer system claim 22, for reasons given above, the rejection of claim 22 under 35 U.S.C. § 103(a) is improper. For at least the same reasons, the rejection is improper for claims 23-28 which depend, directly or indirectly, on claim 22. In addition, dependent claim 24 recites "scrolling said display in accordance with said input signal"

which is not shown by either reference. Kawamoto merely positions a cursor relative to a graph with touch sensitive areas and does not scroll in response to the signal produced when the touch sensitive area is touched as required by claim 24. Bequaert does not even teach a touch sensitive strip; and therefore, cannot cure the deficiency of Kawamoto.

In addition, dependent claim 25 recites "display of [a] text document in accordance with said . . . signal from said linear touch input device" which is not shown by the references individually or in combination. Kawamoto merely positions a cursor relative to a graph with touch sensitive areas and does not display a text document in response to the signal produced when the touch sensitive area is touched as required by claim 25. Bequaert fails to cure the deficiency of Kawamoto.

In addition, dependent claim 26 recites "a pointing device" and "controls said image in accordance with said input data signal from said linear touch input device and . . . said pointing device," which is not shown by either reference or the combination.

In addition, claim 28 recites "further . . . one or more computers, each containing said linear touch input device" which is not shown by either reference or suggested by the combination.

Claims Depending from Claim 29 (Claims 30-33)

With respect to independent claim 29, Appellant again submits there is no proper motivation to combine, and even if combined, the combination does not teach "a linear touch input device. . . integrated with said keyboard" as required by claim 29, for reasons given above. Therefore, a rejection under 35 U.S.C. § 103(a) is improper. For at least the same reasons, the rejection is improper for claims 30-34 which depend, directly or indirectly, on claim 29.

In addition, dependent claim 31 recites "controls scrolling of said display in accordance with said input signal" which is not shown by the references individually or in combination. As explained above, Bequaert does not even teach a touch sensitive strip, and Kawamoto merely positions a cursor relative to a graph with touch sensitive areas and does not scroll in response. For at least the same reason, the rejection is improper for dependent claim 32, which depends on claim 31.

In addition, dependent claim 32 recites "display of [a] text document in accordance with said . . . signal from said linear data signal" which is not shown by the references, for the reasons given above for claim 25. Bequaert does not even teach a touch sensitive strip to produce such a signal; and Kawamoto merely positions a cursor relative to a graph with touch sensitive areas and does not display a text document in response to the signal produced when the touch sensitive area is touched.

In addition, dependent claim 33 recites "a pointing device" and "controls said image in accordance with said input data signal and . . . said pointing device," which is not shown by either reference or the combination.

For the reasons given, it is submitted that the Examiner's rejection of claims 6, 12-17, 22-26, 28-33 and 42 under 35 U.S.C. § 103(a) as being unpatentable over Kawamoto in view of Bequaert is untenable. Accordingly, Appellant respectfully requests reversal of the rejection.

Section 103(a) Rejections (Kawamoto in view of Bequaert and further in view of Smith)

The Examiner erred in rejecting claims 27 and 34 under 35 U.S.C. § 103(a) as being unpatentable over Kawamoto in view of Bequaert and further in view of Smith.

Applicant respectfully submits that claim 27 recites "a two-dimensional input device ... and said processor processes the signal from said two-dimensional input device with said input

from said linear device ... to generate a three-dimensional input signal. Claim 34 recites "a two-dimensional pointing device ... a routine for processing the signal from said two-dimensional pointing device with said input data signal to generate a three-dimensional input signal."

Fundamentally, in addition to the arguments on the lack of motivation to combine Kawamoto and Bequaert, there is no further motivation to combine Smith. The Supplemental Answer states it would be obvious "to have modified Kawamoto . . . with . . . multi-dimensional input . . . so that the user can use the pointing device in a three-dimensional display" (Supplemental Answer, pages 21). However, neither Kawamoto nor Bequaert mention a need for three dimensional pointing. Kawamoto specifically is confined to a two-dimensional graph on a two dimensional display, and Bequaert does not mention generating a 3d input signal.

Furthermore, Smith is directed to "a digitizer tablet with a pointing device providing N-dimensional output information, where N is 3 or greater." (Smith, column 1, lines 58-60). Smith provides no motivation to combine a "digitizer table with a pointing device" with the trend display system of Kawamoto or the keyboard of Bequaert.

In addition to the above arguments, Appellant respectfully submits that neither Smith, Kawamoto, nor Bequaert, singularly or in combination, teach or suggest "said processor processes the signal from said two-dimensional input device with said input from said linear device ... to generate a three-dimensional input signal," as recited in claim 27. These references also do not teach or suggest, singularly or in combination "a two-dimensional pointing device ... a routine for processing the signal from said two-dimensional pointing device with said input data signal to generate a three-dimensional input signal," as recited in claim 34. The "input data signal" recited in claim 34 is generated by "a touch sensitive strip" recited in independent claim 29, from which claim 34 indirectly depends.

Appellant further submits that Smith does not teach or suggest "a linear touch input device integrated with said keyboard," or "a strip of touch sensitive material being integrated with said keyboard." Thus, Smith does not cure the deficiencies in the other references.

It appears that the only reason to combine these references is to produce Appellant's invention, which is impermissible hindsight.

Because there is no motivation to combine these references, and even if combined, the combination does not teach "a linear touch input device integrated with said keyboard" as required by independent computer system claim 22. The Supplemental Answer does not make a prima facie case of obviousness, and a rejection under 35 U.S.C. § 103(a) is improper. For at least the same reasons, the rejection is improper for claims 23-28 which depend, directly or indirectly, on claim 22. Thus, the rejection is improper for claim 27.

Because there is no motivation to combine these references, and even if combined, the combination does not teach "a strip touch sensitive material being integrated with said keyboard" as required by independent claim 29. For the reasons given above, the Office Action does not make a prima facie case of obviousness, and a rejection under 35 U.S.C. § 103(a) is improper. For at least the same reasons, the rejection is improper for claims 30-34 which depend, directly or indirectly, on claim 29. Thus, the rejection is improper for claim 34.

For the reasons given, it is respectfully submitted that the Examiner's rejection of claims 27 and 34 under 35 U.S.C. § 103(a) as being unpatentable over Kawamoto in view of Bequaert and further in view of Smith is untenable. Accordingly, Appellant respectfully requests reversal of the rejection.

CONCLUSION

The Examiner has failed to show that that the independent claims are unpatentable. Each of the claims contains limitations not shown or fairly suggested by the cited prior art, and each achieves benefits not found in the cited prior art. In addition, the Examiner has not established that any of the claims of this application are unpatentable under the judicially created doctrine of obviousness-type double patenting over claim 2 of the '629 patent in view of Kawamoto.

Accordingly, Appellant respectfully requests that the Board of Patent Appeals and Interferences reverse the Examiner's rejections.

Respectfully submitted,

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APPENDIX

1. An input device for providing user controlled inputs, comprising:

a strip of touch-sensitive material sensitive to a range of pressure values, said strip having a substantially constant width and a length which is at least twice said width; and

an interface, connecting said strip to a computer and responsive to human contact with said strip in order to transpose the position and pressure value of said contact into a data signal and to output said data signal.

2. An input device according to claim 1, wherein said interface does not transpose the widthwise position of said contact and said data signal does not indicate the widthwise position of said contact.

4. An input device according to claim 1, wherein said substantially constant width is approximately the width of a human finger.

5. An input device according to claim 4, wherein said input device further comprises a number of keys or buttons and wherein said data signal also indicates the selection of one or more of said keys or buttons.

6. An input device according to claim 5, wherein said number of keys or buttons is four and wherein said keys or buttons are located on said linear touch input device in a position so as to be operable by the fingers of a hand while said strip of touch sensitive material is simultaneously touched by the thumb of the hand.

7. A keyboard having an integrated touch input device, said keyboard comprising;

a housing supporting a plurality of keys, said housing having a top face, a bottom face, and left and right edges; and

a first linear touch input device for providing user controlled inputs, said linear touch input device located adjacent to at least one of said left and right edges on said top face and comprising:

a strip of touch sensitive material, said strip having a substantially constant width and a length which is at least twice said width; and

an interface, connecting said strip to a computer and responsive to human contact with said strip in order to transpose the position of said contact into a data signal indicating the position of said contact along the length of said strip and to output said data signal.

8. A keyboard according to claim 7, wherein said interface does not transpose the widthwise position of said contact and said data signal does not indicate the widthwise position of said contact.

9. A keyboard according to claim 7, wherein said interface also transposes the pressure of said contact and said data signal also indicates the pressure of said contact.

10. A keyboard according to claim 7, wherein said substantially constant width is approximately the width of a human finger.

11. A keyboard according to claim 10, wherein said linear touch input device further comprises a number of touch keys or buttons and wherein said data signal also indicates the selection of one or more of said touch keys or buttons.

12. A keyboard according to claim 11, wherein said keys or buttons and said strip of touch sensitive material are located on said linear touch input device in a position so as to be operable by the fingers of a hand while said strip of touch sensitive material is simultaneously touched by the thumb of the hand.

13. A keyboard according to claim 12, wherein said strip of touch sensitive material is located on the top face of said housing and said touch keys or buttons are located on at least one of said left edge and said right edge of said housing.

14. A keyboard according to claim 12, wherein said strip of touch sensitive material is located on the top face of said housing and said touch keys or buttons are located on the bottom face of said housing.

15. A keyboard according to claim 12, wherein said strip of touch sensitive material is substantially straight.

16. A keyboard according to claim 12, wherein said strip of touch sensitive material is substantially arc shaped.

17. A keyboard according to claim 7, further comprising a second linear touch input device and wherein said first linear input device is located at or near said left edge of the keyboard and said second linear touch input device is located at or near said right edge of the keyboard.

22. A computer system comprising:

a computer bus;

a linear touch input device for providing user controlled inputs to said bus, said liner touch input device comprising:

a strip of touch sensitive material, said strip having a substantially constant width and a length which is at least twice said width, and

an interface, connecting said strip to said computer bus and responsive to human contact with said strip in order to transpose the position of said contact into an input data signal

indicating the position of said contact along the length of said strip and to output said data signal to said computer bus; and

a processor configured to receive the input data signal from said linear touch input device and process information in accordance with said input data signal; and

a keyboard having a plurality of alphanumeric keys and outputting a keyboard signal indicating the selection of said alphanumeric keys by a user, said linear touch input device being integrated with said keyboard, and said processor performs processing of display data in response to said keyboard signal and said input data signal from said linear touch input device.

23. A computer system according to claim 22, wherein said computer system further comprises a display arranged to display said image display data under the control of said processor and said processor controls said image display data in accordance with said input data signal.

24. A computer system according to claim 23, wherein said processor controls scrolling of said display in accordance with said input data signal.

25. A computer system according to claim 22, wherein said image display data represents a text document and said computer system performs processing of said text document in accordance with said keyboard signal and display of said text document in accordance with said input data signal from said linear touch input device.

26. A computer system according to claim 23, wherein said computer system further comprises a pointing device and wherein said processor controls said image in accordance with said input data signal from said linear touch input device and a signal from said pointing device.

27. A computer system according to claim 26, wherein said pointing device comprises a two-dimensional pointing device and said processor processes the signal from said two-

dimensional pointing device with said input data signal from said linear touch input device under the control of programming instructions to generate a three-dimensional input signal.

28. A computer system according to claim 22, wherein said computer system further comprises a network and one or more computers, each containing said linear touch input device, connected to said network.

29. A computer program product for implementing a method for providing user controlled inputs to a computer comprising:

a computer readable memory medium; and

a computer program including

a routine for, in response to human contact of a strip of touch sensitive material by hand, converting the position of said contact into a data signal indicating the position of said contact along the length of said strip; and

a routine for outputting said data signal to a bus of said computer, wherein said computer comprises a keyboard having a plurality of alphanumeric keys and outputting a keyboard signal indicating the selection of said alphanumeric keys by a user, said strip being integrated with said keyboard, and said processor performs processing of display data in accordance with said keyboard signal and said input data signal from said strip.

30. A computer program product according to claim 29, wherein said computer program is arranged to control the display of an image in accordance with said input data signal.

31. A computer program product according to claim 30, wherein said computer program controls scrolling of said display in accordance with said input data signal.

32. A computer program product according to claim 31, wherein said computer comprises a keyboard having a plurality of alphanumeric keys and outputting a keyboard signal

indicating the selection of said alphanumeric keys by a user, said strip of touch sensitive material is integrated with said keyboard, and said computer program performs processing of a text document in accordance with said keyboard signal and to control a display of said text document in accordance with said input data signal.

33. A computer system according to claim 30, wherein said computer comprises a pointing device and wherein said computer program controls said image in accordance with said input data signal and a signal from said pointing device.

34. A computer system according to claim 33, wherein said pointing device comprises a two-dimensional pointing device and computer program includes a routine for processing the signal from said two-dimensional pointing device with said input data signal to generate a three-dimensional input signal.

35. A keyboard according to claim 7, wherein said linear touch sensitive material has a longitudinal direction and said longitudinal direction is substantially parallel to at least one said left and right edges.

36. A keyboard according to claim 17 wherein said second linear touch input device used in conjunction with said first linear touch input device for generating a two-dimensional input signal.

37. A keyboard according to claim 11, wherein selection of said touch keys or buttons modifies a granularity of movement controlled by said strip of touch sensitive material.

38. An input device according to claim 1 further comprising a second strip of touch sensitive material, wherein said first and a second strips of touch sensitive material control input in one dimension.

39. An input device according to claim 38 wherein said first and second strips of touch sensitive material in combination control two-dimensional input.

40. An input device according to claim 38 wherein one of said first and second touch sensitive input strips controls granularity of the other of said first and second touch sensitive input strips.

41. An input device according to claim 38 further comprising at least one key that when activated simultaneous to activation of either touch sensitive input strip controls granularity of input.

42. An input device according to claim 38 further comprising at least one key that when activated simultaneous to activation of said first touch sensitive input strip controls selection of a function altered in one dimension by said first touch sensitive input strip.